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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
| 10/726,574 | 12/04/2003 | Shihe Fan | 48679 | 5066 |

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| EXAMINER | |
| PARA, ANNETTE H | |

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| ART UNIT | PAPER NUMBER |
| 1661 | |

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/726,574

Applicant(s)

FAN ET AL.

Examiner

Annette H. Para

Art Unit

1661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/31/2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10, 12-20, 23, 24, 27, 29-32 and 45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-20, 23, 24, 27, 29-32 and 45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 31, 2007 has been entered.

Claims 11 and 33-44 are cancelled. Claims 1-10, 12-32 and 45 are examined.

Claim Rejections - 35 USC § 102

The rejection of claims 1-4, 6-10, 12-14, 16, 18, 20, 23, 24, 27, 29-31 and 45 under (b) as being clearly anticipated by Fan et al. is withdrawn in light of applicant's amendment of the claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-10, 12-20, 23-24, 27, 29-32 and 45 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Fan et al. (United States Patent No. 6, 444, 467) in view of Pierik (In Vitro Culture of Higher Plants 1997).

The rejection is modified from the rejection set forth in the Office action mailed on June 11, 2007.

Fan et al. et al. teach a nutrient medium comprising 1-9% of sucrose (column 4, line 10), solid, liquid and gas phases (column 3, lines 62-63) for growth of somatic embryos into an autotrophic seedling. The solid components are but not restricted to vermiculite, perlite, peat (pulp of wood containing alpha cellulose), coconut husk fibres (which are flexible fibbers) and the like (column 8, lines 50-51). The somatic embryos are held on the

Art Unit: 1661

surface or above the surface of the medium by the mean of a physical support such as polypropylene materials (column 8, 43-44).

Fan et al. also teach sowing somatic embryos in mini plug trays having their drainage holes covered by a mesh-like material to support the somatic embryos. These containers are then placed onto liquid germination media such that the embryos are in contact with but are not submerged in the liquid media (column 8, lines 59-67). Fan et al. teach a solid component comprising elongated particles (column 12, line 34).

Finally Fan et al. teach growing *Pinus radiata*, *Pinus teada* (Loblolly pine), and *Picea glauca* (spruce) somatic embryos, which are conifer species. The nutrient medium used by Fan et al. has a viscosity, and remain in contact with embryo. When the somatic embryo is sown onto the surface of the absorbent material (column 8, lines 55-58) it creates a depression in the solid surface providing physical support to the embryos. Fan et al. also suggest pouring a nutrient solution onto the three-phase substrate prior to sowing the pre-germinated somatic embryos to adjust the moisture content of the substrate to 60-85% (claim 23). The medium in contact with the pre-germinated embryos is made of three-phase substrate and nutrient solution.

Finally, Fan et al. teach sowing the pre-germinated embryos onto three-phase media, which are drench with nutrient solution (column 11, lines 5-10).

The prior art teaching of Fan et al. differs from the claimed invention as follows:

Fan et al. fail to teach nutrient medium comprising gelling agents

Fan et al. fail to teach the content of solids in the medium to a maximum of 10%.

However,

Pierik teaches nutrient media comprising agar to form a gel (page 55).

The percentage of solids in the medium is an optimization of parameters. The reference does not specifically teach a content of 10 % solids in the medium as claimed by Applicant. The percentage of solids in the medium is a clearly result effective parameters that a person of ordinary skill in the art would routinely optimize. Optimization of parameters is a routine practice that would be obvious for a person of ordinary skill in the art to employ. It would

Art Unit: 1661

have been customary for an artisan of ordinary skill to determine the optimal concentration of solids to help the nutrient to stay in contact with the embryos, thus giving more usefulness to the method. One would have also been motivated to use this percentage of solids in the medium to optimize the surface of the embryos in contact with the nutrient. Thus, absent some demonstration of unexpected results from the claimed parameters, the optimization of the content of 10 % solids in the medium would have been obvious at the time of Applicant's invention.

At the time the invention was made it would have been obvious for one of ordinary in the art to modify the method of Fan et al. by adding agar mixed with the nutrient medium knowing that gelling agent serve as binding agent for nutrient and water and to use 10% of solids. One of ordinary skill in the art would have been motivated to do that because adding this step will lower the maintenance of the germinant as no added water or nutrient will be needed because they will be contained in the gelling agent and also because the low percentage of solids in the medium will raise the surface of embryos in contact with the nutrient. Thus, the invention as a whole was clearly *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

Claims 21, 22, 25, 26, 28 remain rejected under 35 U.S.C. § 103(a) as being unpatentable over Fan et al. (United States Patent No. 6, 444, 467) in view of each of Gupta (United States Patent 5,563,061 1996) and of Tremblay et al. (Plant Cell, Tissue and Organ Culture 42: 39-46 1995).

The claims are drawn to a method of sowing a conifer species *ex vitro* in a medium comprising a nutrient medium comprising a solid component, within a flowable component containing water and a monosaccharide (glucose and fructose), oligosaccharides and combination of in the nutrient medium. Wherein the flowable component has being selected from the group consisting of a fluid and a semi-solid.

The teachings of Fan et al. are discussed above.

The prior art teaching of Fan et al. differs from the claimed invention as follows:

Fan et al. fail to teach the use of monosaccharides in the nutrient medium. Fan et al. fail to use glucose or fructose as carbohydrate. Fan et al. also fail to teach maltose as a carbohydrate nutrient. Finally Fan et al. fail to teach the content of solids in the medium to a maximum of 10%.

Tremblay et al teach the use of monosaccharides (glucose and fructose), oligosaccharides and combination of in the nutrient medium.

Gupta teaches the use of 3% of maltose in embryos culture as a carbohydrate nutrient.

The percentage of solids in the medium is an optimization of parameters. The reference does not specifically teach a content of 10 % solids in the medium as claimed by Applicant. The percentage of solids in the medium is a clearly result effective parameters that a person of ordinary skill in the art would routinely optimize. Optimization of parameters is a routine practice that would be obvious for a person of ordinary skill in the art to employ. It would have been customary for an artisan of ordinary skill to determine the optimal concentration of solids to help the nutrient to stay in contact with the embryos, thus giving more usefulness to the method. One would have also been motivated to use this percentage of solids in the medium to optimize the surface of the embryos in contact with the nutrient. Thus, absent some demonstration of unexpected results from the claimed parameters, the optimization of the content of 10 % solids in the medium would have been obvious at the time of Applicant's invention.

At the time the invention was made it would have been obvious for one of ordinary in the art to modify the method of Fan et al. by using monosaccharides, oligosaccharides and combination of, knowing, as applicants state in the specification, "that mixtures of simple carbohydrates as compared to monotype carbohydrate, may similarly promote or improve growth of conifer somatic germinants" (page 34). Moreover, it would have been obvious for one of the ordinary in the art to use maltose as carbohydrate in light of the fact that Gupta teaches that maltose is a growth enhancer *in vitro*. Therefore, optimization of parameters is a routine practice that would be obvious for a person of ordinary skill in the art to employ. Furthermore, it would have been customary for an artisan of ordinary skill to determine the optimal concentration of solids to help the nutrient to stay in contact with the embryos, thus giving more usefulness to the method. One would have also been motivated to use this percentage of solids in the medium to optimize the surface of the embryos in contact with the nutrient. One of ordinary skill in the art would have been motivated to do that to obtain an economic return.

Art Unit: 1661

Thus, the invention as a whole was clearly *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

Conclusion

No claim is allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Future Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Annette H. Para whose telephone number is (571) 272-0982. The examiner can normally be reached Monday through Thursday from 5:30 a.m. to 4:00 p.m.

Art Unit: 1661

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anne Marie Grunberg, can be reached at (571) 272-0975. The fax number for the organization where the application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either the Private PAIR or the Public PAIR. Status information for unpublished applications is available through the Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov> . Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Annette H Para/